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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------------|-------------|----------------------|---------------------|------------------|
| 10/535,570 | 07/06/2005 | Pasi Nurminen | 123760 | 7488 |
| 25944 | 7590 | 06/04/2008 | | |
| OLIFF & BERRIDGE, PLC | | | EXAMINER | |
| P.O. BOX 320850 | | | CALANDRA, ANTHONY J | |
| ALEXANDRIA, VA 22320-4850 | | | ART UNIT | PAPER NUMBER |
| | | | 1791 | |
| | | | | |
| | | | MAIL DATE | DELIVERY MODE |
| | | | 06/04/2008 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | |
|------------------------------|------------------------|---------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/535,570 | NURMINEN ET AL. |
| | Examiner | Art Unit |
| | ANTHONY J. CALANDRA | 1791 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 20 May 2005.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-13 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-13 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 20 May 2005 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>7/06/2005</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| | 6) <input type="checkbox"/> Other: _____ . |

Detailed Office Action

1. The communication dated 5/20/2005 has been entered and fully considered.
2. Claims 1-13 are currently pending.

Priority

3. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Finland on 11/20/2002. It is noted, however, that applicant has not filed a certified copy of the 20022068 application as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 1, 5, 6, 8, and 9 rejected under 35 U.S.C. 102(b) as being anticipated by U.S.

Patent 5,290,454 DORICA et al., hereinafter DORICA, as evidenced by *KOCH Membrane Systems Website*, hereinafter KOCH.

As for claim 1, the examiner has not given the preamble to the claim patentable weight as it merely recites an intended use and purpose of the process, and the subsequent process steps are able to stand on their own. However, for the purpose of compact prosecution the examiner has shown how DORICA meets both the intended use and purpose of the process.

DORICA discloses making CTMP pulp, which is a mechanical pulp, for the purpose of removing suspended solids, colloidal material, and dissolved solids and further treating the process water for reuse in the mill (*A method in making of mechanical pulp, where the amount*

of organic dissolved and colloidal substances is reduced in the pulp making process water by treating a part of the process water [abstract; column 4 lines 35-36]).

DORICA discloses the process water filtrate comes from the wood yard, pulp mill, or paper mill [abstract]. DORICA gives the example of treating effluent from waste-water from a screw press of a pulp washing stage using a drum filter to filter out suspended solids (*process water filtrate separated from the pulp to be made by a press located before bleaching, is led to pre-treatment where elongated fibres are fractionated from the process water to be treated* [column 4 lines 46-65]). DORICA does not state that said washing stage is from a bleaching stage and therefore the examiner has interpreted said stage as a brown-stock washing stage which occurs prior to bleaching. DORICA discloses that the filtrate that passes through the pretreatment is then treated by ultra-filtration/ reverse osmosis membranes which remove contaminants from the water (*the filtrate that has passed the pre-treatment-is led to membrane filtration where at least part of the organic dissolved and colloidal substances included in the process water are separated from the rest of the process water* [column 2 lines 58-60]). The dissolved substances are sent to further treatment such as burning (*membrane filtration concentrate, i.e. the colloidal and dissolved substances separated from the process water, are led to further treatment* [column 2 lines 60-65]). The clean water is of high quality and purity and can be recycled within the mill (*the permeate i.e. the process water that has passed the membrane filtration is led back to the pulp making process* [column 2 lines 54-55])

As for claim 5, DORICA dissolved substances are sent to further treatment such as burning [column 2 lines 60-65]).

As for claims 6 and 8, the examiner has not given the preamble to claim 6 patentable weight as it merely recites an intended use and purpose of the process, and the subsequent process steps are able to stand on their own. However, for the purpose of compact prosecution the examiner has shown how DORICA meets both the intended use and purpose of the apparatus.

DORICA discloses making CTMP pulp, which is a mechanical pulp, for the purpose of removing suspended solids, colloidal material, and dissolved solids and further treating the process water for reuse in the mill (*an arrangement in making of mechanical pulp to reduce the amount of organic dissolved and colloidal substances in the pulp making process water by treating a part of the process water* [abstract; column 4 lines 35-36]).

DORICA discloses the use of a filter, such a rotating drum as means for separating interfering fibers from filtrate which originates from a screw press (*means for leading the process water filtrate, separated from the pulp being made with a press located before bleaching, to a pre-treatment means; pre-treatment means for fractioning the elongated fibres from the process water being treated* [column 4 lines 46-65]). DORICA does not state that said washing stage is from a bleaching stage and therefore the examiner has interpreted said stage as a brown-stock washing stage which occurs prior to bleaching. DORICA discloses piping means for leading the filters filtrate from the pre-treatment to a membrane (*means for leading the filtrate, which has passed the pre-treatment means, to the membrane filtration means* [Figure 3 lines (94); column 2 lines 58-60]). The ultrafiltration membrane of DORICA is capable of separating out organic and colloidal substances to leave a purer process water (*membrane filtration means for separating at least part of the organic dissolved and colloidal substances included in the process*

water from the rest of the process water [Figure 5 ultrafiltration membrane; column 2 lines 60-65]). DORICA discloses that the colloidal and dissolved substances are lead away for burning (*means for leading the membrane filtration concentrate i.e. colloidal and dissolved substances separated from the process water to further treatment* [Figure 5 line (116); column 2 lines 60-65]). DORICA teaches the means for leading the clean effluent back to the process (*means for leading the permeate i.e. the process water passed through the membrane filtration back to the pulp making process* Figure 5 line (124); column 2 lines 54-55]).

As for claim 9, DORICA discloses an ultrafiltration membrane followed by a reverse osmosis membrane which is two membranes arranged in series [Figure 5 Ultrafiltration (114) and Reverse Osmosis (120)].

6. Claims 3, 4, 11, and 12 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent 5,290,454 DORICA et al., hereinafter DORICA, as evidenced by *KOCH Membrane Systems Website*, hereinafter KOCH.

As for claims 3, 4, 11, and 12, DORICA states that the membrane used can be an ‘ultrafiltration’ unit [column 2 lines 55-60]. DORICA does not explicitly state what the retention capacity of an ultrafiltration unit is. However, a person of ordinary skill in the art would recognize that an ultrafiltration membrane is defined as a membrane that removes substances with a Molecular weight size range of about 20,000 to about 100,000 g/mol as evidenced by KOCH, which falls within the claimed range with sufficient specificity to constitute anticipation under the statute [1st figure pg. 1]. Alternatively, it would have been *prima facie* obvious to a person of ordinary skill in the art to optimize the pore size of the membrane to adjust the types and percentages of solids removed to the concentrate versus the permeate.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 2 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,290,454 DORICA et al., hereinafter DORICA in view of *Handbook for Pulp and Paper Technologists* by SMOOK, hereinafter SMOOK.

As for claim 2, DORICA discloses that the sludge can be purged/incinerated [column 5 lines 1-5]. The limitation 'pulp making process' can be broadly read as any process in a pulp mill which helps towards the production of pulp. In the instant case the recovered sludge is sent to incineration. Waste incineration produces heat which is used to generate steam (e.g. a mill bark boiler) which is used in mechanical pulping processes such CTMP.

Alternatively, it would have been obvious to use the fiber recovered in the sludge directly in the paper making process. SMOOK discloses that in the paper making process it is typical to recover fiber back from waste water stream such as whitewater which has been filtered (just as

the effluent of DORICA has been filtered) and send said streams to the paper machine headbox [pg. 248, Figures 16-50/51/52/53]. Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to recover the fiber from the filter of DORICA directly to the paper making process at the headbox as taught by SMOOK. A person of ordinary skill in the art would be motivated to meet both requirements of ecology and economy by recovering the fibers and any suspended fillers [SMOOK pg. 248].

As for claim 13, DORICA discloses that contaminants removed from the effluent are incinerated [column 2 lines 60-65]]. DORICA does not disclose adding sawdust or bark to said sludge or the means for which this may be completed. SMOOK discloses that during solids handling sludge is dewatered before incineration and that bar or saw dust can be added to the sludge [g. 390 and 391, Figures 26-15/16/17]. At the time of the invention it would have been obvious to add sawdust/bark using the means disclosed by SMOOK to the sludge to be dewatered in FREMONT. A person of ordinary skill in the art would be motivated by the fact that adding sawdust or bark helps act as a filter aid and as such increases dewatering capability and that dewatered pulps are easily handled and have improved heat value [pg. 390]

DORICA does not disclose adding sawdust or bark to said sludge or the means for which this may be completed. SMOOK discloses that during solids handling sludge is dewatered before incineration and that bar or saw dust can be added to the sludge [g. 390 and 391, Figures 26-15/16/17]. At the time of the invention it would have been obvious to add sawdust/bark using the means disclosed by SMOOK to the sludge to be dewatered in DORICA. A person of ordinary skill in the art would be motivated by the fact that adding sawdust or bark helps act as a

filter aid and as such increases dewatering capability and that dewatered pulps are easily handled and have improved heat value [pg. 390].

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,290,454 DORICA et al., hereinafter DORICA, in view of U.S. Patent 6,302,997 HURTER et al., hereinafter HURTER, or Handbook for Pulp and Paper Technologists by SMOOK, hereinafter SMOOK.

As for claim 7, DORICA discloses the use of a drum filter as an apparatus for separating fibers (suspended solids) from the filtrate that is sent to the ultrafiltration unit [Figure 5]. DORICA further states 'it should be clearly understood that various screens or belt filters can be used in place of the drum filter' [column 4 lines 57-60]. DORICA does not explicitly disclose using a pressure screen. HURTER discloses the use of a black liquor filter (which is a pressure screen) to separate out fibers from black liquor filtrate []. At the time of the invention it would have been obvious to a person of ordinary skill in the art to substitute the drum filter of DORICA with the black liquor filter (pressure screen) of HURTER. It is *prima facie* obvious to substitute one known element for another known element to obtain predictable results. In the instant case a pressure screen would predictable filter out suspended solids.

Alternatively, SMOOK also discloses pressure screens as screens capable of separating out particles by size [pg. 109-110]. At the time of the invention it would have been obvious to a person of ordinary skill in the art to substitute the drum filter of DORICA with the pressure screen of SMOOK. It is *prima facie* obvious to substitute one known element for another known element to obtain predictable results. In the instant case a pressure screen would predictable filter out suspended solids. SMOOK further passes the more stringent TSM test in that it states

pressure screens have a high capacity and small space requirements compared to other screening devices [pg. 109].

11. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,290,454 DORICA et al., hereinafter DORICA.

As for claim 10, DORICA does not disclose that either the ultra-filtration membrane is run in parallel with another membrane. However, the duplication of parts is *prima facie* obvious unless a new and unexpected result is obtained [see e.g. 2144.04 MPEP (VI) (B)]. In the instant case adding an additional membrane in parallel to handle additional volume of effluent is obvious in the way that adding another lane to relieve traffic is obvious. A person of ordinary skill in the art would readily be expected to add an additional membrane in parallel if the first membrane capacity has been met.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 3,758,405 FREMONT discloses using a filter and an ultra-filtration membrane to purify water from a Kraft pulp mill. As the preambles to claim 1 and 6, were not given patentable weight, FREMONT could be applied to the instant claims as it states that filtrate from any portion of the Kraft process can be treated. FREMONT is not the best art as it is missing the 'screw press' which supplies the filtrate to the treatment system.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY J. CALANDRA whose telephone number is (571)

270-5124. The examiner can normally be reached on Monday through Thursday, 7:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AJC

/Eric Hug/
Primary Examiner, Art Unit 1791